

## Acute Hepatitis of Unknown Origin

### Suggested investigations and specimen collection

National Institute for Communicable Diseases (NICD)

24-hour hotline number: 0800 212 552

#### Suggested investigations for children presenting with acute hepatitis of uncertain aetiology

Sample type	Specimen collection details	Test	Pathogen
<b>Blood</b>	EDTA (purple top) tube	PCR	Adenovirus;
	EDTA (purple top) tube	PCR	Hepatitis E; CMV; <a href="#">EBV</a> ; HSV
	Serum separating tube (SST) (yellow top)	Serology	Hepatitis A-C, E;
	EDTA (purple top) tube and SST (yellow top)	Serology	CMV; <a href="#">EBV</a>
	EDTA (purple top) tube & (SST) (yellow top)	Serology	<a href="#">SARS-CoV-2</a> anti-S, SARS-CoV-2 anti-N
	BacT/ALERT Aerobic/Anaerobic culture bottles	Culture	Standard culture for bacteria/fungi (only if clinically indicated i.e. fever)
<b>Blood</b>	Whole blood in EDTA and SST specimens	Toxicology	Local investigations according to history; paracetamol levels
<b>Throat swab</b>	Flocked or spun swab with tube containing universal transport medium (UTM)	PCR	Respiratory virus panel; (including adenovirus/enterovirus/ <a href="#">influenza</a> , <a href="#">SARS-CoV-2</a> /rhinovirus/RSV)
<b>Throat swab</b>	Flocked or spun swab with tube containing UTM	Culture	<a href="#">Streptococcus A</a>
<b>Stool</b>	Specimen bottle	PCR	Adenovirus, sapovirus, norovirus, enterovirus.
<b>Stool</b>	Specimen bottle	Culture	Standard bacterial stool pathogen panel for culture to include <i>Salmonella spp.</i> , <i>Campylobacter spp.</i> , <i>Shigella spp.</i> , <i>E.coli</i> and Enterovirus
<b>Urine</b>	Specimen bottle	Toxicology/Culture	Local investigations according to history

Pathogens [underlined and in blue](#) in the table above are linked to useful resources for steps on how to collect specimens.

#### Additional Resources

NICD hotline on 0800 212 552 or emailing [outbreak@nicd.ac.za](mailto:outbreak@nicd.ac.za).

[UK Health Security Agency. Investigation into acute hepatitis of unknown aetiology in England Technical briefing.](#)

[CDC Health Alert Network. Pediatric Hepatitis and Adenovirus 41 Infection. NH Division of Public Health Services. April 21 2022.](#)

[UKHSA Guidance note including recommended tests](#)

[European Centre for Disease Prevention and Control, Update: Hepatitis of unknown origin in children](#)

[WHO. Multi-Country- Acute, severe hepatitis of unknown origin in children. April 23 2022.](#)

[Public Health England. UK Standards for Microbiology Investigations Acute Infective Hepatitis](#)

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### Step 1: Equipment and materials

1. NHLS or private laboratory request form
2. Flocked or spun swab (appropriate oropharyngeal swab for oral sample)
3. Tube containing universal transport medium (UTM). If UTM unavailable, use sterile saline or send dry in a sterile tube
4. Blood tubes: EDTA (purple top) and SST (yellow top) tubes
5. Specimen bottles
6. Gloves, apron, surgical mask
7. Tissue for the patient to use after sample collection
8. Biohazard bag for disposal of non-sharp materials
9. Cooler box and cooled ice packs
10. Ziploc plastic specimen bag

### Step 2: Record keeping

1. Complete the NHLS/private lab request form (*include mandatory information*)
2. Place laboratory request form into a Ziploc plastic specimen bag
3. Label the sample tube with the patient's name, date of birth and sample type. Attention to **Jayendrie Thaver/Dr Nishi Prabdial-Sing, (011 3866419/6347) Centre for Vaccines and Immunology (CVI), NICD.**

### Step 3: Specimen collection

#### 3.1 Blood

- Specimens are to be collected in an EDTA (purple top) and SST (yellow top) tubes
- On the specimen submission form, clearly request 'Adenovirus PCR' testing

#### 3.2 Stool

- Unscrew the lid from the specimen bottle. Set aside.
- Prepare the collection container (clean shallow pan, plastic bag or clear plastic wrap) in which you will collect the sample.
- Collect the sample. If possible, do not collect stool that has been mixed with water or urine.
- Transfer enough of the selected stool to the specimen bottle. **Do not overfill.**
- Screw the lid back on the container. Make sure it is closed tightly.




#### or Rectal Swab

- Insert swab gently into the rectal sphincter (2 to 3cm) and rotate. Remove swab and check for visible faecal matter.
- Place swab in a specimen bottle.
- Break off and discard the top portion of the swab-stick.

#### 3.3 Throat Swab

- Open a sterile flocked or spun swab at the plastic shaft
- Ask the person to tilt their head back slightly, and to open their mouth as wide as possible.
- Depress the person's tongue and ask them to say, "Ahh."
- Collect the throat specimen by rubbing the sterile swab tip on the surface of one or both tonsils, the tonsillar pillars, or the posterior pharyngeal wall.
- After collection of the specimen, slowly withdraw the swab, break the plastic shaft at the break point line and place into the UTM. Tightly close the tube.

### Recommended Specimen Equipment

	EDTA (PCR) 2x2 ml tubes (Paeds) 1x5 ml tubes (adolescent)
	Specimen bottle
	Flocked or spun swab and tube containing UTM

### Step 4: Transport of specimens

1. Place all specimens in separate Ziploc plastic specimen bags together with the relevant request forms and seal them.
2. Transport to the laboratory on the day of specimen collection. Stool samples should be kept on ice, but not frozen.
3. If transport to the testing laboratory is  $\geq 2$  days, respiratory, stool and urine specimens should be kept cool until transport arrives.

**NB. Leaking specimens will be rejected**

#### NHLS testing laboratories

A list of [NHLS testing laboratories](#) and detailed specimen collection procedures is provided on the NHLS website within the Laboratory Test Information Handbook.

#### Private testing laboratories

Lancet  
 Ampath  
 PathCare